Claims

What is claimed is:

1. A wireless communications device adapted to transact muti-layered communications with a second wireless device, the wireless communications device comprising a processor, and a program in memory to be executed by the processor to effect a multi-layered communications protocol, the multi-layered communications protocol comprising a layer 3 interface in communications with a layer 2 interface, the layer 2 interface having layer 2 communications data, the layer 2 interface comprising:

a null state in which the layer 2 interface has no established layer 2 wireless connection with the second wireless device;

a data transfer state in which the layer 2 interface is in wireless communications with a layer 2 interface on the second wireless device and transmits the layer 2 communications data to the layer 2 interface on the second wireless device, the processor switching from the null state to the data transfer state according to an establish primitive from the layer 3 interface, and switching from the data transfer state to the null state according to a release primitive from the layer 3 interface;

a reset pending state in which the layer 2 interface is in wireless communications with the layer 2 interface on the second wireless device and the transmission of the layer 2 communications data is halted, the processor switching from the data transfer state to the reset pending state when a protocol error is found by the layer 2 interface, switching from the reset pending state to the data transfer state according to a reset acknowledge signal received from the second wireless device, and switching from the reset pending state to the null state according to the release primitive from the layer 3 interface;

a local suspend state in which the layer 2 interface is in wireless communications with the layer 2 interface on the second wireless device and halts the transmission of the layer 2 communications data after a predetermined event indicated by the layer 3 interface, the processor switching from the data transfer state to the local suspend state according to a suspend primitive from

the layer 3 interface, switching from the local suspend state to the data transfer state according to a resume primitive from the layer 3 interface, and switching from the local suspend state to the null state according to the release primitive from the layer 3 interface; and

a reset/suspend state in which the layer 2 interface is in wireless communications with the layer 2 interface on the second wireless device and the transmission of the layer 2 communications data is halted, the processor switching from the reset/suspend state to the reset pending state according to the resume primitive from the layer 3 interface, switching from the reset pending state to the reset/suspend state according to the suspend primitive from the layer 3 interface, switching from the reset/suspend state to the local suspend state according to the reset acknowledge signal received from the second wireless device, switching from the local suspend state to the reset/suspend state when a protocol error is found by the layer 2 interface, and switching from the reset/suspend state to the null state according to the release primitive from the layer 3 interface.

[c2]   2. The wireless communications device of claim 1 wherein the memory further comprises a reset routine for resetting the layer 2 interface, and the processor executes the reset routine when the processor switches from the reset pending state to another state.

[c3]   3. The wireless communications device of claim 2 wherein when the processor is in the data transfer state and is switching to the reset pending state when a protocol error is found by the layer 2 interface, the wireless communications device transmits a reset signal to the second wireless device.

[c4]   4. The wireless communications device of claim 2 wherein when the processor is in the data transfer state and receives a reset signal from the second wireless device, the processor executes the reset routine, and the wireless communications device transmits a reset acknowledge signal to the second wireless device.

[c5]   5. The wireless communication device of claim 1 wherein the layer 2 interface

comprises a finite state machine to implement the reset/suspend state.